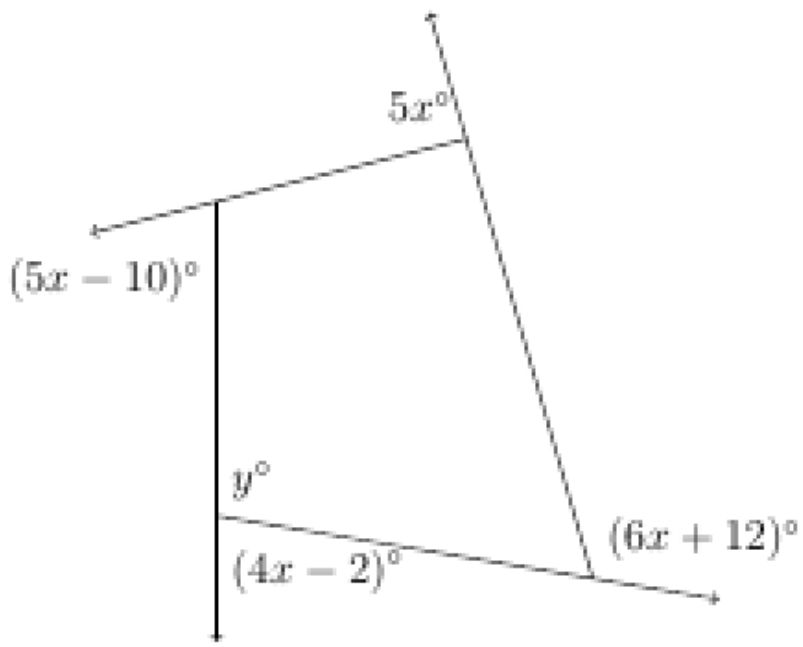
Topic: Exterior angles of polygons

Question: Solve for the variable.

Find the value of y.



Answer choices:

A $105°$

B $110°$

C $115°$

D $120°$

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Solution: B

The sum of the exterior angles must be $360°$. Therefore, we can say

$$(4x - 2°) + (5x - 10°) + 5x + 6x + 12° = 360°$$

$$20x = 360°$$

$$x = 18°$$

$y°$ and $(4x - 2)°$ make a straight line, so

$$y + 4x - 2° = 180°$$

Then substitute $18°$ for x and solve for y.

$$y + 4(18°) - 2° = 180°$$

$$y = 110°$$

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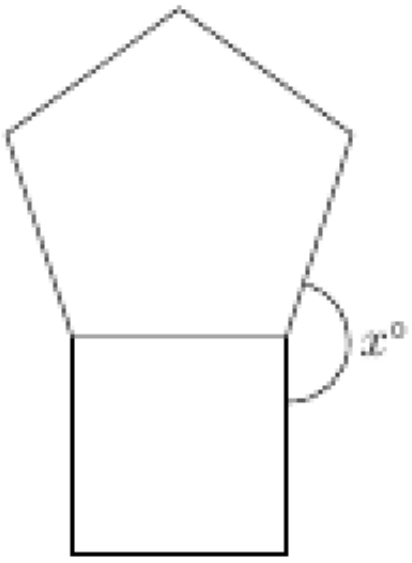
Question: Solve for the variable.

The figure shows a regular pentagon and a square. Find the value of x.



Answer choices:

A $132°$

B $142°$

C $152°$

D $162°$

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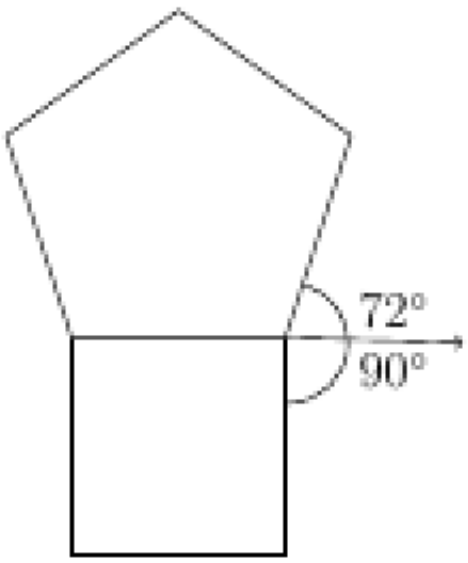
Solution: D

An exterior angle of a regular pentagon has a measure of

$$360^\circ \div 5 = 72^\circ$$

An exterior angle of a square has a measure of

$$360^\circ \div 4 = 90^\circ$$



Therefore we can say that x is given by

$$x = 72^\circ + 90^\circ = 162^\circ$$

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Topic: Exterior angles of polygons

Question: What is the sum of the interior angles of the polygon?

A regular polygon has an exterior angle of $2x + 8°$ and a second exterior angle of $56° - x$.

Answer choices:

A $1{,}080°$

B $1{,}260°$

C $1{,}440°$

D $1{,}620°$

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Solution: B

Exterior angles of a regular polygon are congruent, so

$$2x + 8^\circ = 56^\circ - x$$

$$3x + 8^\circ = 56^\circ$$

$$3x = 48^\circ$$

$$x = 16^\circ$$

The exterior angle measure is

$$56^\circ - 16^\circ = 40^\circ$$

The number of sides, n, will be

$$360^\circ \div 40^\circ = 9$$

The sum of interior angles is therefore

$$(9 - 2)180^\circ = 1{,}260^\circ$$

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